Summary: Shirburn Model Farm (Oxfordshire) 19th July 2022

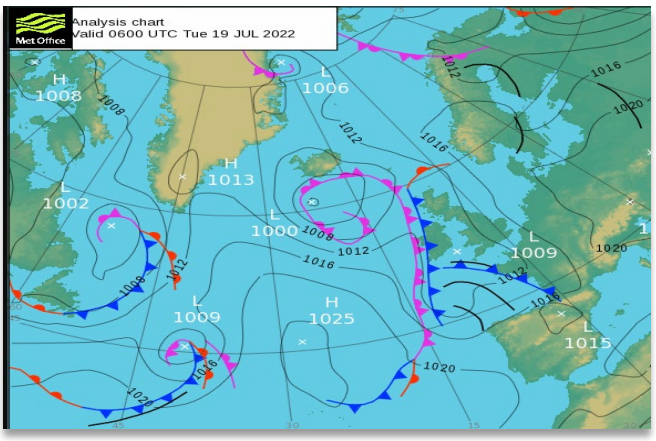
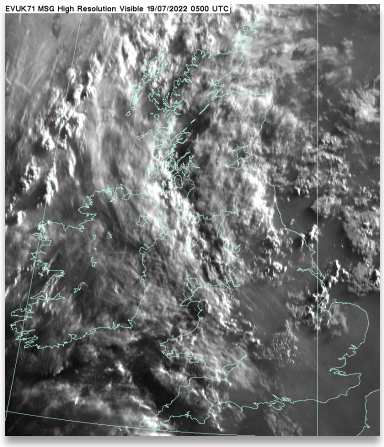
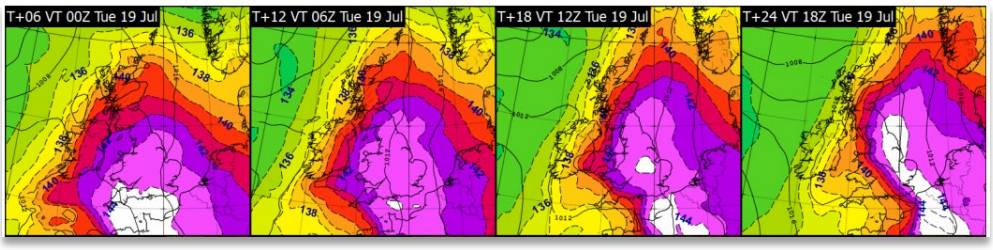
New record : New UK highest Daily minimum temperature

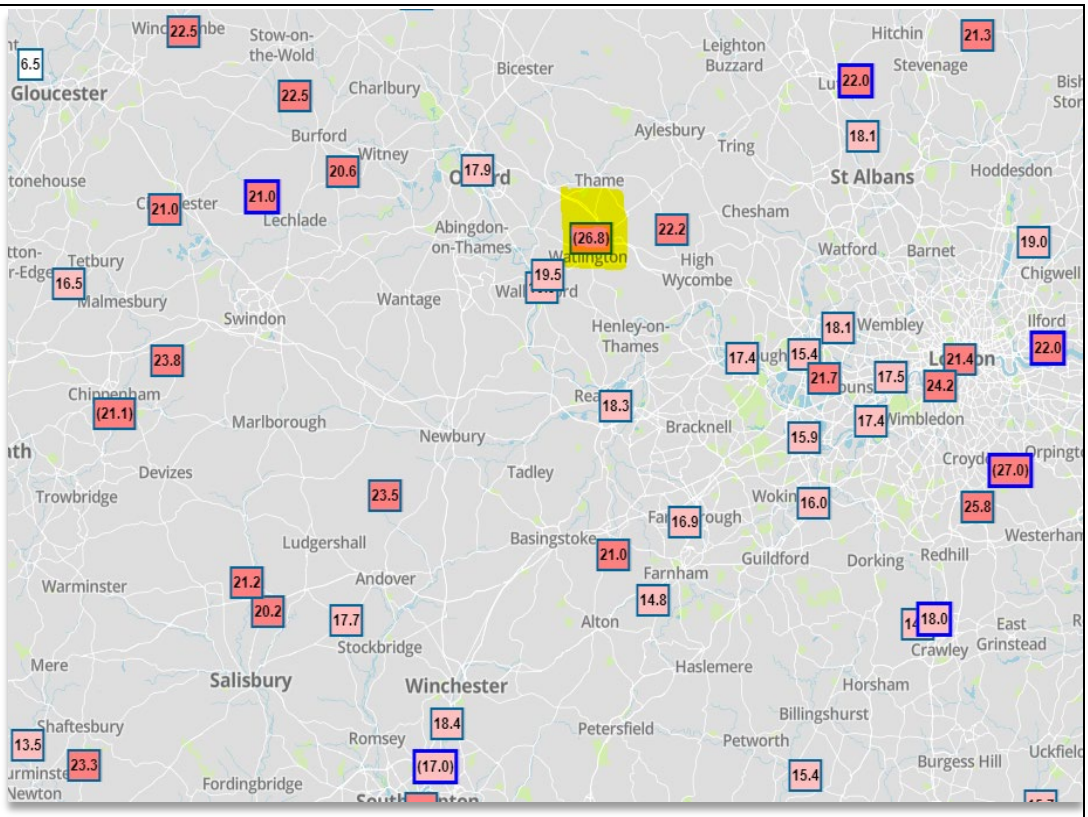
Occurrence: On 19th July 2022 a daily minimum temperature of 26.8C was recorded at Shirburn Model Farm (Oxfordshire)

Verified: 22nd August 2022

GDPR sensitive information. No personal information to be contained within this document

Note: Each event will no doubt be unique, a structure is provided below for ensuring conformance of process and to aid the collection of relevant information. Reference to the RNM ISO process is expected. Additional information will no doubt also be required.

Is the 'occurrence/record' feasible given the general synoptic situation? QM	  High pressure dominates central Europe, feeding a hot southerly airstream over much of the UK. A series of frontal structures bring some relatively cooler air to parts of Northern Ireland and the South-West England in the later stages of the day. The high thickness tropical airmass was predicted to bring temperatures of 40 C or greater in a good number of medium range forecasts, which similar extremes experienced on the continent – as such the scenario was credible to values recorded across the network.
In this synoptic situation is the station concerned one feasible for the 'occurrence/record'? QM	Forecast data provides the context and locations of expected extremes accompanied by the UK's first red extreme Heat warning stretching from London up to Central England. 

<table>
<tr><td colspan="2"></td><td> 
</td></tr>
<tr><td colspan="2"></td><td>Although at first glance the 26.8C would appear to be an outlier, however:
• there were other examples of sites that were reasonably close but having large differences in their Day Min temp readings for this day.
• Overnight patching cloud appears to have been present
• and there are a number of sites in the area with a 7 degree difference to the grass min.</td></tr>
<tr><td rowspan="2">Quality Management</td><td>Previous scores & comments</td><td>Good quality scores. An average of 99% of data in last 12 months is unchanged. Therefore 99% of data submitted in last 12 months is regarded as good data.</td></tr>
<tr><td>Current comments</td><td>Value on 19th looks high compared to immediate neighbours but there is a lot of variation in overnight mins in southern England on this night and the observer is very reliable and experienced. Reading from HMT sensor also supports 26.8C.</td></tr>
<tr><td colspan="2">Evidence of occurrence/record. RNM</td><td>The temperature was recorded on an alcohol-in-Glass thermometer serial number 71482/19. There is however a HMT on site and the pictures below shows this backed up the LIG record.</td></tr>
<tr><td colspan="2">Statement on the risk of interference RNM</td><td>There are no reasons to suggest there was outside interference. The observer has a lot of experience and in my opinion very reliable.</td></tr>
<tr><td rowspan="5">Instrument RNM</td><td>Approved Type</td><td>The temperature was recorded on a primary alcohol-in-glass minimum thermometer (serial No 71482/19).

The secondary sensor is a Vaisala OY Temperature HMT333. It was installed on 16th November 2017.</td></tr>
<tr><td>Asset ID / Applicable co-efficients</td><td>Alcohol-in-glass minimum thermometer (serial No 71482/19). This thermometer is in calibration until 25/11/2025.

The sensor is a Vaisala OY Temperature HMT333 Asset number SM006356 (Ser No N3630387) Met Ref 0125171.</td></tr>
<tr><td>Verification checks</td><td>I checked this thermometer alongside the HMT with my travelling standard on 19th August 2022 and both passed the checks. See table below.</td></tr>
<tr><td>Calibration period</td><td>As per the calibration certificate below. The sensor was last calibrated on the 10th November 2017. It is not due for re-calibration until 9th November 2022.</td></tr>
<tr><td>Physical condition</td><td>The A-I-G thermometer I checked was broken. The glass had broken on the outer sheath and was held together by tape. Despite this it still passed the check. The actual recording</td></tr>
</table>

<table>
<tr><td colspan="2"></td><td>sheath in the thermometer was in good order. The thermometer has been recovered if needed.
The observer recorded this break occurred on the 5th August and was still in one piece on the date of the record.

There are additional dry and wet ERTs in the screen that belong to the observer (see photos). My opinion on this is it is not ideal but no different to the set-up we have at AWS sites so is not a reason to reject the reading.</td></tr>
<tr><td colspan="2">Instrument Installation RNM</td><td>The screen and thermometers were in good order and configured correctly. As stated the break on the thermometer occurred after the record.</td></tr>
<tr><td>Instrument Exposure RNM</td><td>Exposure – CIMO rating</td><td>CIMO ASSESSMENT OF: | CIMO SCORE | HIGH SCORE REASON 1:
TEMPERATURE AND HUMIDITY | CLASS 4 | SITE IS SHADED AND PROXIMITY OF HEAT SOURCES.
There are some trees to the NE and a gravel track running past the enclosure that have increased the CIMO grading. See screen shot below. | The previous assessment was done on 13/08/2020 by Phil Johnson and was given a CIMO 3. This has increased due to growth of trees.</td></tr>
<tr><td>Instrument Exposure RNM</td><td>Exposure – Met Office rating</td><td>Date of Assessment: 19/08/2022
QC ASSESSMENT | ANSWER
ASSESSMENT OF SCREEN TEMPERATURES ON ARRIVAL | SATISFACTORY
ASSESSMENT OF SCREEN TEMPERATURES ON DEPARTURE | SATISFACTORY
ASSESSMENT OF SITE ON ARRIVAL | EXCELLENT
ASSESSMENT OF SITE ON DEPARTURE | EXCELLENT</td></tr>
<tr><td></td><td>Unnatural surface areas %</td><td>3 m: 0
10 m: 5%
30 m: 12%
100 m: 6%</td></tr>
<tr><td></td><td>Exposure - comments</td><td>I have no issues with the exposure of this site and would be happy to accept the readings from there.</td></tr>
<tr><td colspan="2">Observer Competence RNM</td><td>The observer has around 60 years of experience and is extremely competent.</td></tr>
<tr><td colspan="2">Last Inspection comments RNM</td><td>The last inspection by Phil Johnson stated “THE SCREEN WILL BE SHADED WHEN THE SUN IS LOW IN THE SKY TO THE E AND W”. I back this comment but would add the exposure is generally very good.</td></tr>
<tr><td colspan="2">Confirmation that the output data / graphs are credible / consistent.</td><td>From what I found I have no reason to doubt the reading.[RNM]</td></tr>
<tr><td colspan="2">Other Comments / and Outcome.</td><td>My conclusion is the exposure of this site is good, and the observer is very good. The questions to be asked were about the A-I-G thermometer and the additional ERT’s in the screen.
In my view I accept the break in the thermometer occurred after the event. The thermometer is accurate, and it was backed up by the HMT. Therefore, I have no reason to doubt it.
As for the additional ERT’s. This set up is very similar to our AWS set up, so it would be hard to reject the reading on the back of this.

In my opinion I am happy to accept the reading from an equipment point of view.</td></tr>
</table>

Conclusion: Value accepted by SWAT meeting 22nd August 2022

Contents:

Other Supporting Information

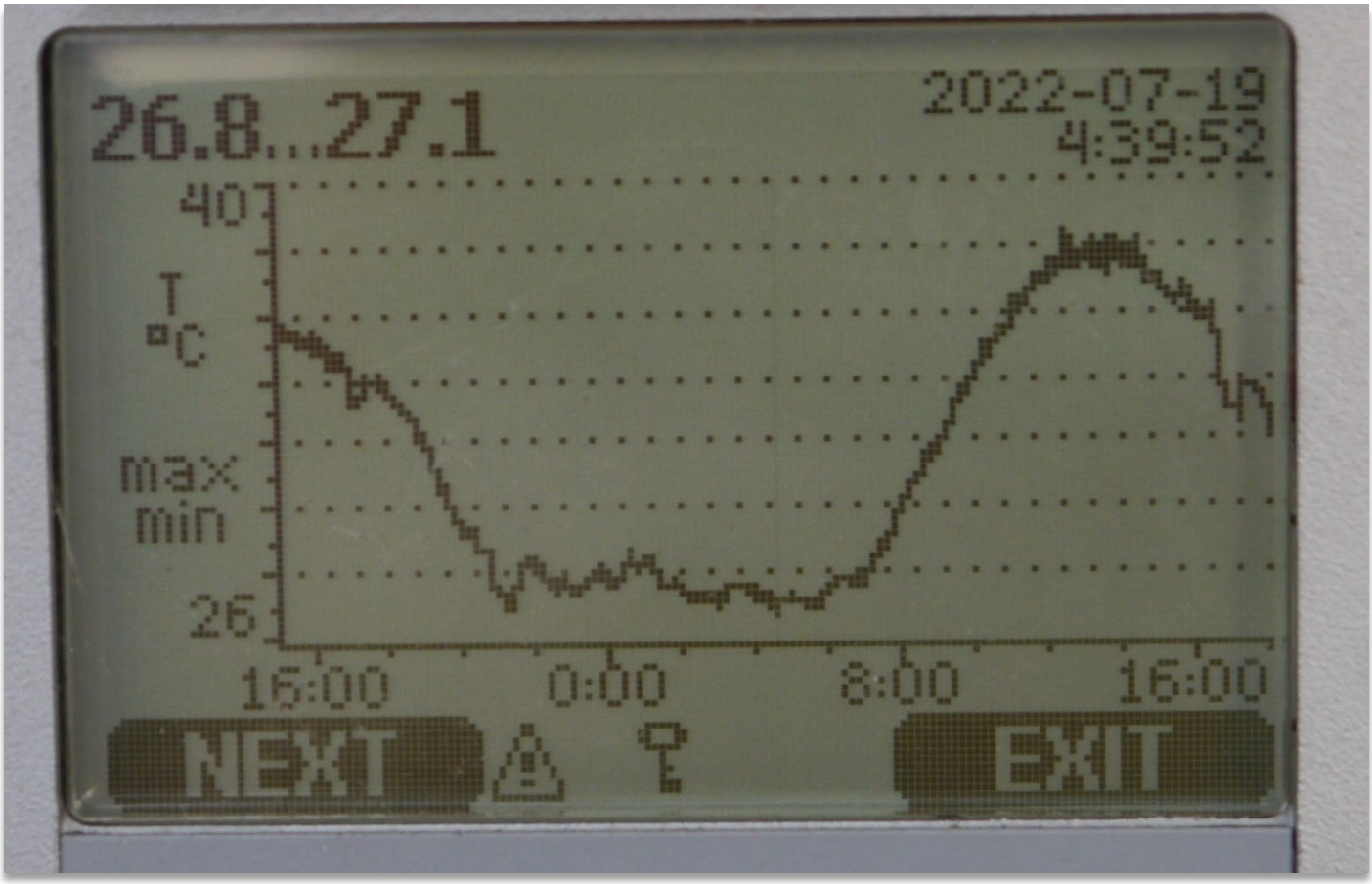
The observer at Shirburn sends his data by spreadsheet. He mentions himself that it looks high, but also claims he checked it. He does not confirm that he used the LIG but the most likely way of checking it would be by using the HMT unit to confirm the LIG reading.

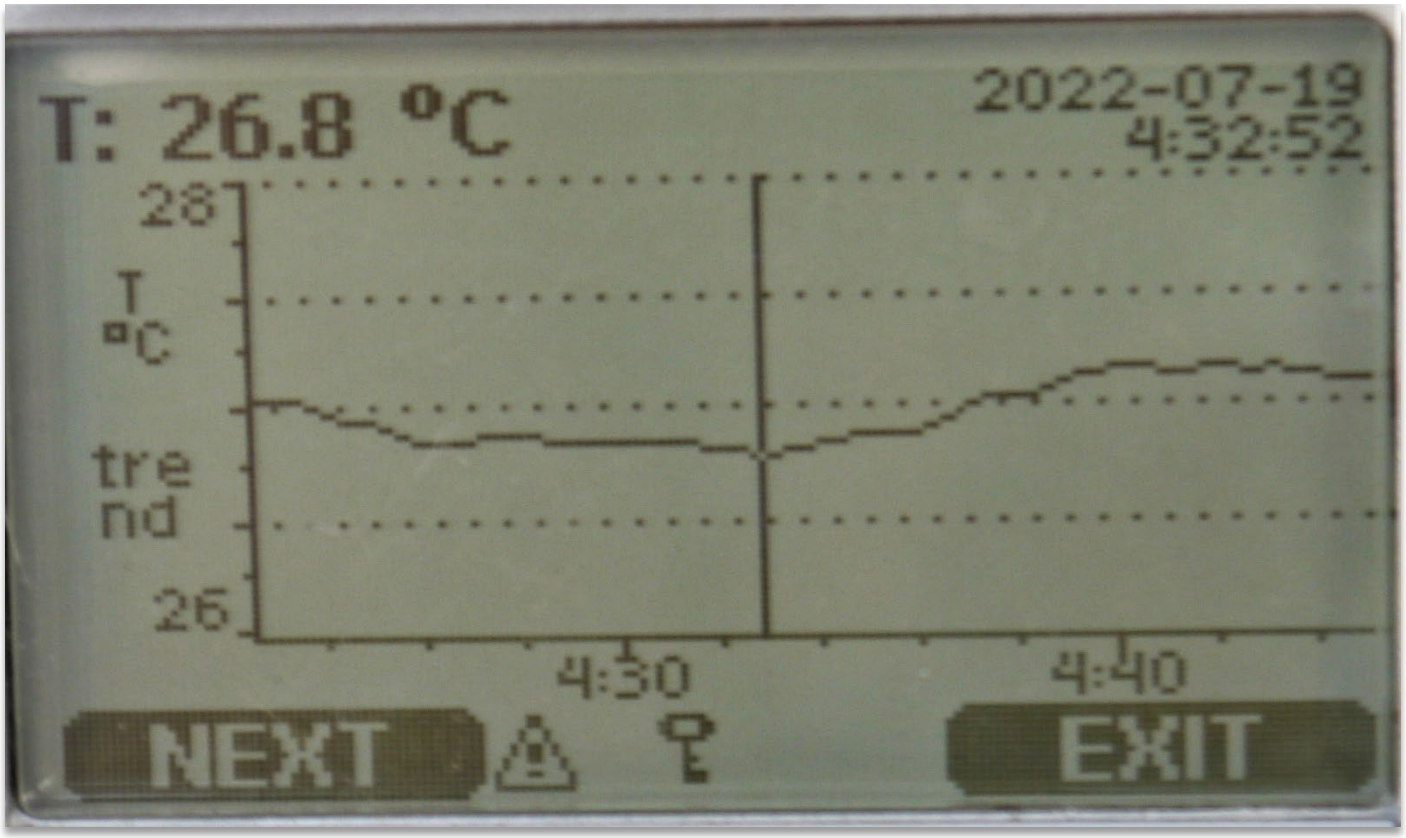
DCNN	Hr UTC	Year	Month	Station Name:	Shirburn
4542	0900	2022	07	Two letter ID:	SB

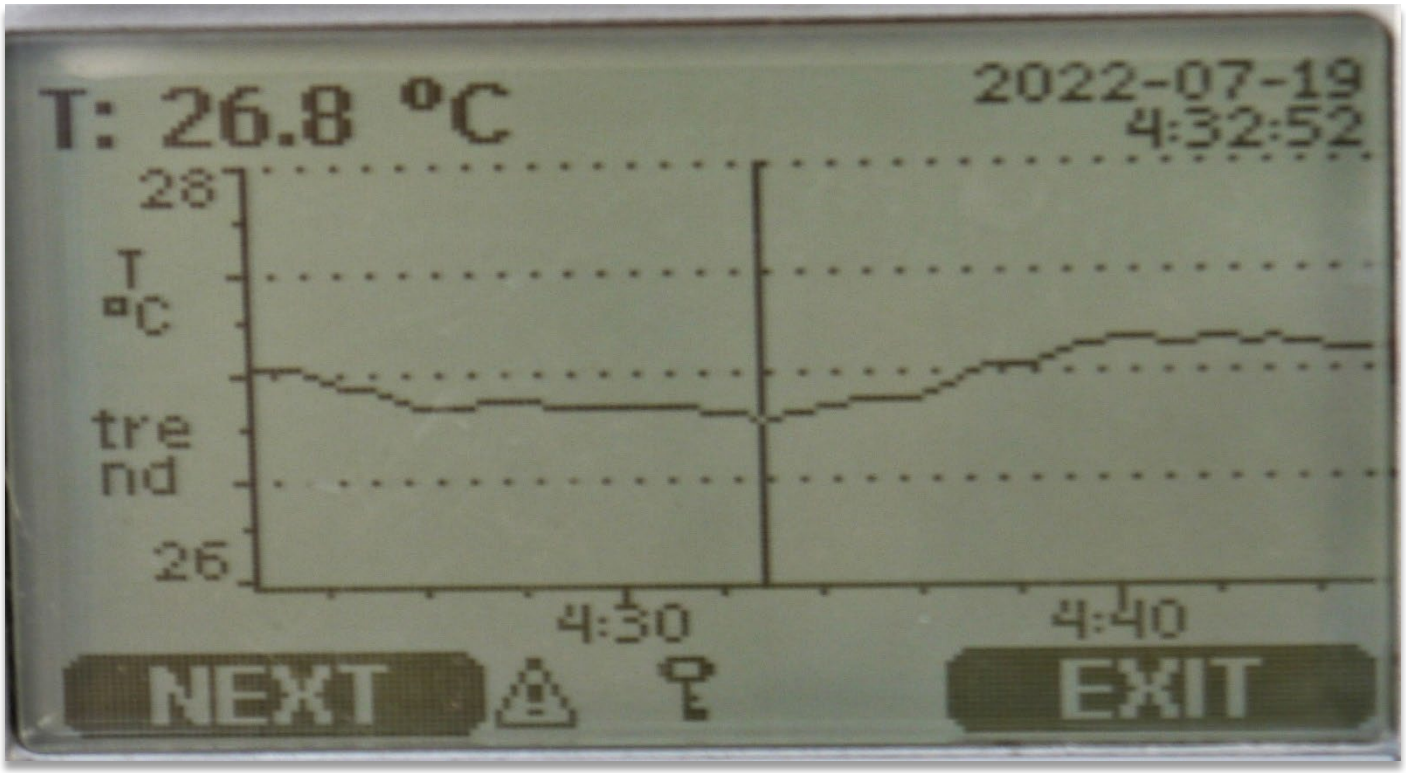
Compulsory cells. You must enter the Ye

DATE	Total cloud	Wind Dir. Whole degrees	Wind speed knots	Present weather	Visibility	Temperat Dry bulb	Wet bulb	Max thrown Back	Min	Grass
18	1	160	02	02	8	29.0	18.9	36.3	17.4	10.6
19	1	160	11	02	7	32.0	19.9	38.3	26.8	18.8

Please note that the minimum of Tue 19th. July seems high compared to RAF Benson only a few miles away, Reading was also much lower; my checks suggest that the reading is accurate. This is noticeably higher than I have recorded as a minimum. I would be interested to know if any higher minima are found for that date.



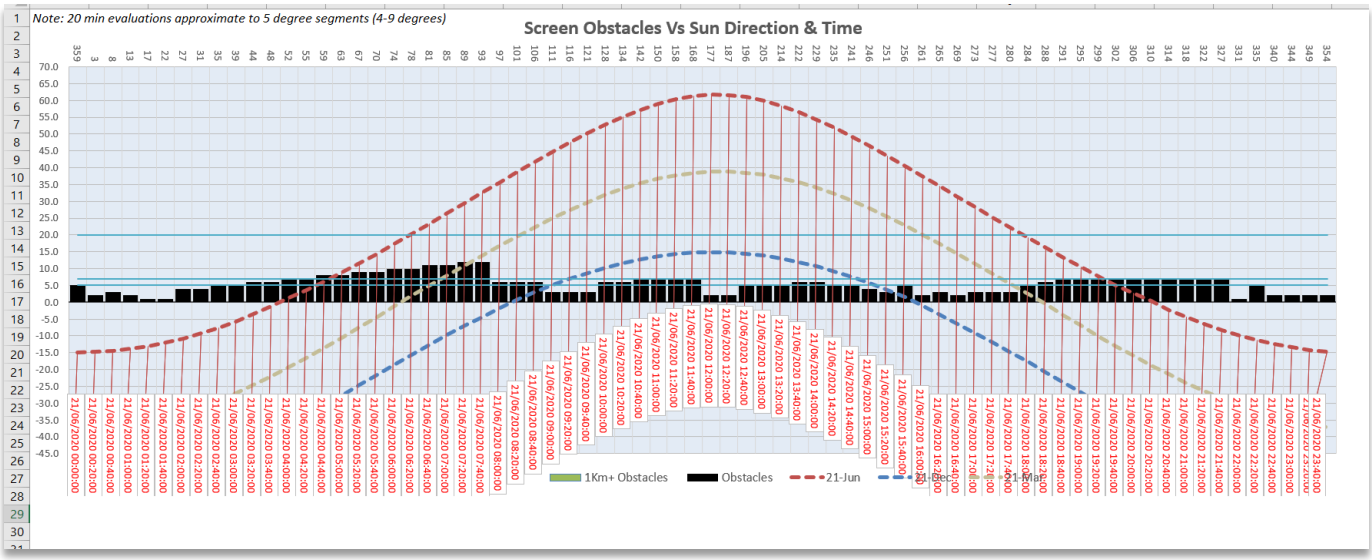




Photographs/Maps/Graphs/Charts/Supporting evidence from Yammer or correspondence

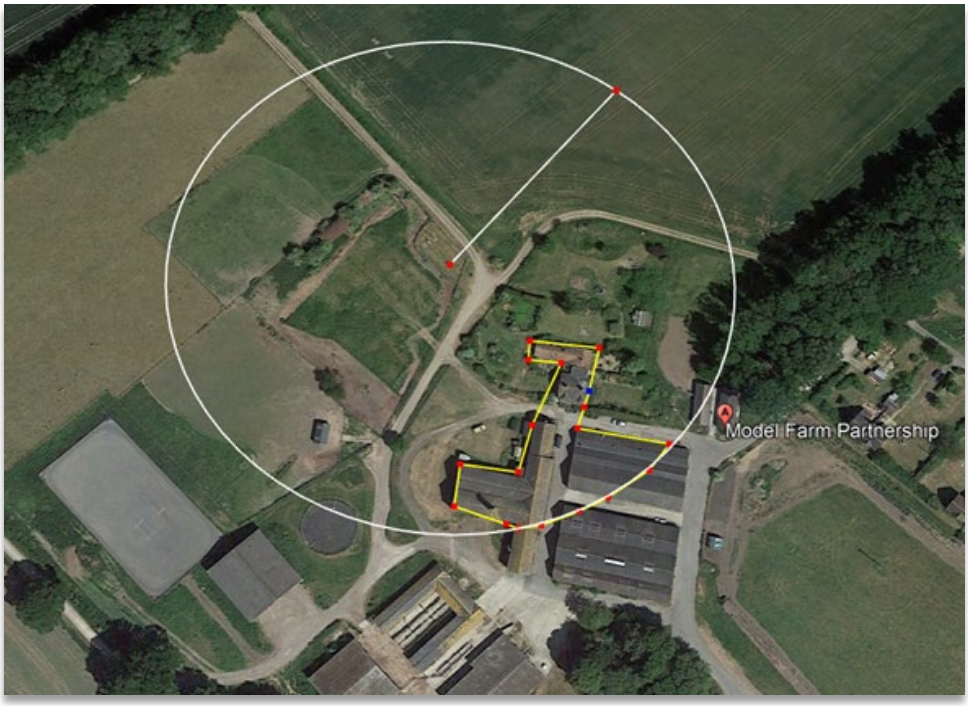
On site check of site thermometers and travelling standard using an aspirated Dewar flask.

Thermometer	Serial number	reading 1	reading 2	reading 3	reading 4
Alcohol-in-glass	71482/19	0.1	0.1	0.1	0.2
HMT333	N3630387	0.1	0.1	0.1	0.1
Travelling standard	S4840076	0.05	0.05	0.06	0.05



30m unnatural surfaces – 12%

100m unnatural surfaces – 6%


Model Farm Partnership

Additional ERTs in screen.

A-I-G calibration certificate

Quality Assurance Laboratory
Met Office FitzRoy Road Exeter EX1 3PB United Kingdom
Tel: +44(0)330 135 3246

Met Office

Certificate of Conformance for a Thermometer

Met Ref: 21201/21270 **Type:** Minimum 2/C / Grass Minimum 2/C

Serial Number: 71482/19 **Expiry Date:** 25/11/2024

The thermometer has been tested and found to conform to the specification which is described below.

Specification: BS692:1990 ***Issue Number: --*** ***Dated: 1990*** ***Section: --***

Cert No. TL827/19 **Calibrated by:** AWW

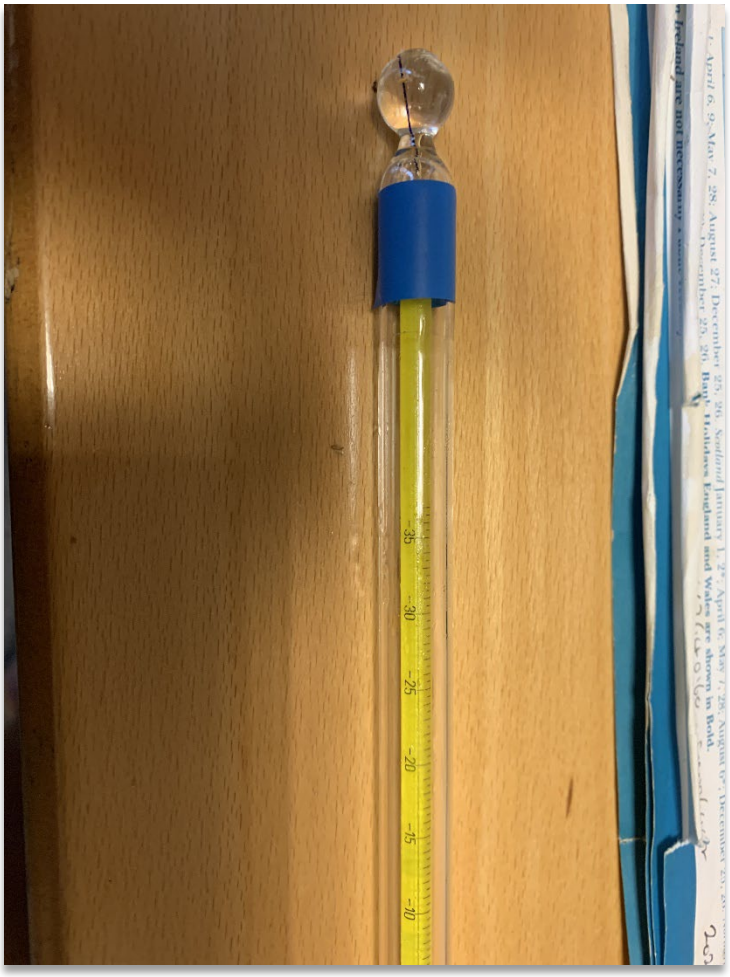
Date of Test: 26/11/2019

For the Chief Executive, Met Office.

N.B. Please read notes overleaf.

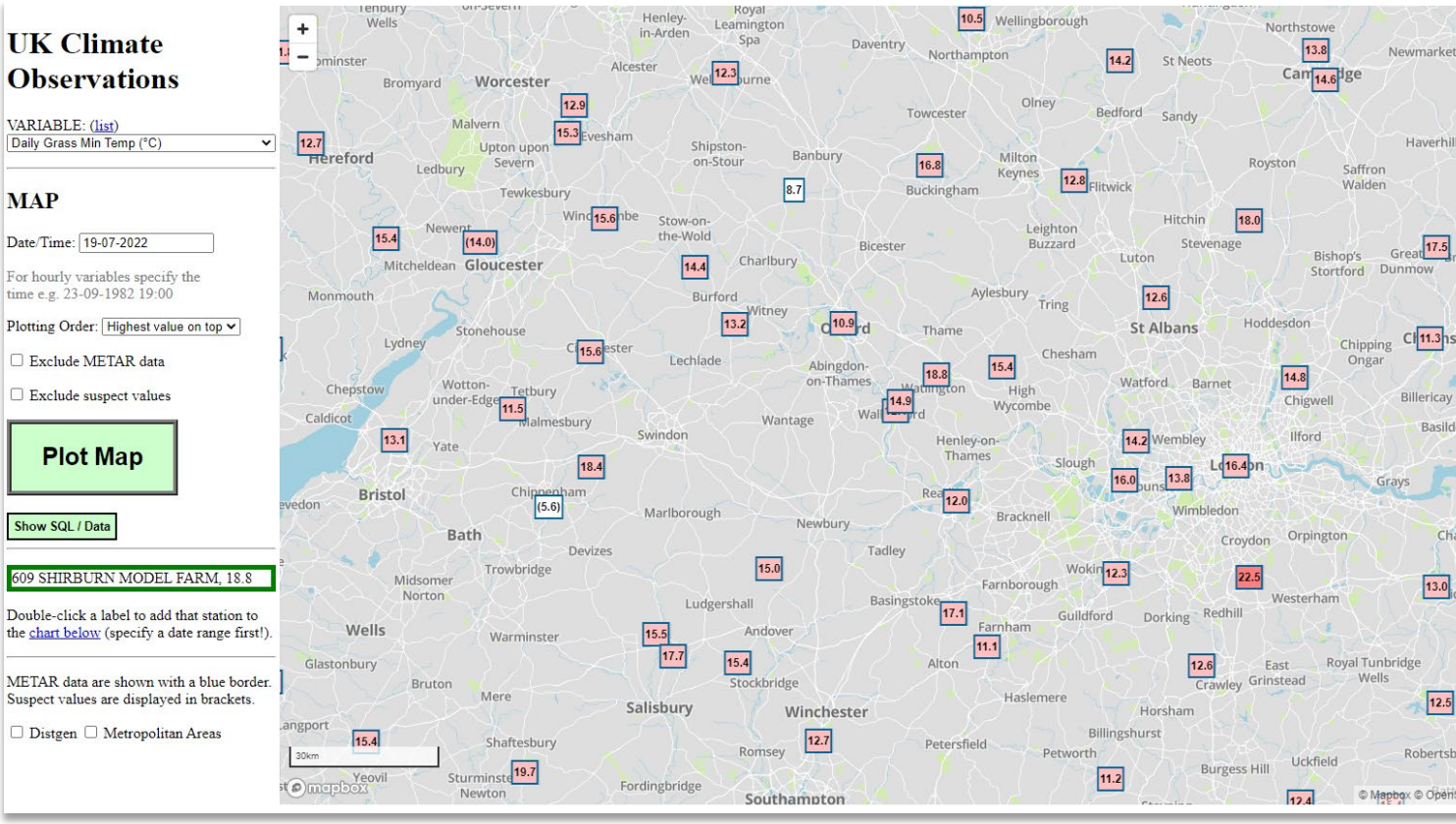
Notes:

1. All standards and measuring equipment used for this calibration are traceable to the realisation of the units of measurement as made by the National Physical Laboratory.
2. The uncertainty of measurement of the test equipment used is calculated not to exceed ±0.02°C.



Panorama

Grass minimum temperatures


UK Climate Observations
VARIABLE: (list)
Daily Grass Min Temp (°C)
MAP
Date/Time: 19-07-2022
For hourly variables specify the time e.g. 23-09-1982 19:00
Plotting Order: Highest value on top
Exclude METAR data
Exclude suspect values
Plot Map
Show SQL / Data
609 SHIRBURN MODEL FARM, 18.8
Double-click a label to add that station to the chart below (specify a date range first!).
METAR data are shown with a blue border. Suspect values are displayed in brackets.
Distgen
Metropolitan Areas
Hereford
Worcester
Gloucester
Bristol
Bath
Wells
Salisbury
Winchester
Southampton
Swindon
Oxford
Banbury
Northampton
Wellingborough
Bedford
Luton
St Albans
Watford
Slough
Reading
Basingstoke
Guildford
Croydon
Wembley
Chesham
Aylesbury
Milton Keynes
Buckingham
Towcester
Daventry
Leamington Spa
Stevenage
Hitchin
Royston
Haverhill
Newmarket
Cambridge
Northstowe
St Neots
Sandy
Olney
Wantage
Abingdon-on-Thames
Henley-on-Thames
High Wycombe
Leighton Buzzard
Bicester
Charlbury
Burford
Witney
Thame
Tring
Chipping Ongar
Hoddesdon
Watford
Barnet
Chigwell
Ilford
Grays
Wimbledon
Orpington
Farnborough
Farnham
Alton
Haslemere
Petersfield
Petworth
Horsham
Billingshurst
Crawley
East Grinstead
Royal Tunbridge Wells
Redhill
Dorking
Westerham
Burgess Hill
Uckfield
Andover
Stockbridge
Romsey
Tadley
Newbury
Marlborough
Devizes
Trowbridge
Warminster
Shaftesbury
Fordingbridge
Ludgershall
Midsomer Norton
Glastonbury
Bruton
Mere
Yeovil
Sturminster Newton
Chepstow
Caldicot
Monmouth
Lydney
Stonehouse
Wotton-under-Edge
Tetbury
Malmesbury
Chippenham
Yate
Lechlade
Stow-on-the-Wold
Shipston-on-Stour
Upton upon Severn
Malvern
Evesham
Ledbury
Tewkesbury
Newent
Mitcheldean
Alcester
Bromyard
Henley-in-Arden
Royal Leamington Spa
Olney
Bedford
Sandy
Flitwick
Saffron Walden
Great Dunmow
Bishop's Stortford
Billericay
Basildon
Chigwell
Wembley
Wokingham
Reading
Bracknell
Wimbledon
Croydon
Orpington
Grays
Ilford
Chesham
Amersham
High Wycombe
Abingdon-on-Thames
Wantage
Swindon
Malmesbury
Tetbury
Wotton-under-Edge
Chepstow
Caldicot
Monmouth
Lydney
Stonehouse
Lechlade
Stow-on-the-Wold
Shipston-on-Stour
Upton upon Severn
Malvern
Evesham
Ledbury
Tewkesbury
Newent
Mitcheldean
Alcester
Bromyard
Worcester
Hereford
Wells
Glastonbury
Bruton
Mere
Warminster
Shaftesbury
Fordingbridge
Ludgershall
Andover
Stockbridge
Romsey
Tadley
Newbury
Marlborough
Devizes
Trowbridge
Midsomer Norton
Bath
Bristol
Chippenham
Yate